

**REMARKS**

Claim 1 has been amended to incorporate subject matter of Claim 3. Claim 3 has been amended to delete the recitation to the difference in aromatic vinyl compound content between the copolymer (C) and the copolymer (B). Entry of this Amendment is respectfully requested. Claims 1-16 are pending.

**Response to Claim Rejections Under § 103**

I. Claims 1-12 and 15-16 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,959,039 to Yokoyama et al; and

II. Claims 3-16 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Yokoyama in view of U.S. Patent No. 6,376,593 to Sasaka et al.

Applicants respectfully traverse.

Yokoyama discloses a rubber composition comprising:

a high-molecular weight polymer component having a weight-average molecular weight of at least  $30 \times 10^4$  and a bound styrene content of not greater than 30% by weight; and

a low-molecular weight polymer component having a weight-average molecular weight of from  $0.2 \times 10^4$  to  $8 \times 10^4$  and a bound styrene content of not greater than 30% by weight,

wherein each of the high-molecular weight polymer component and the low-molecular weight polymer component satisfies the following formula:

$$S + (V/2) < 25$$

wherein S represents an amount in % by weight of bound styrene and V represents a vinyl linkage content in % by weight.

Further, Yokoyama disclose at col. 4, lines 12-14 that “25 or more of the value of  $S+(V/2)$  should be avoided because deterioration in the low-temperature flexibility occurs.” Thus, Yokoyama teaches away from using a copolymer (C) comprising 20-60 mass% of an aromatic vinyl compound and having a vinyl bond content in the diene compound portion of 10-80 mass%, as recited in present Claim 1, because when S is 20-60 and V is 10-80,  $S+(V/2)$  is 25 or more.

Sasaka discloses a rubber composition comprising a low-molecular weight butadiene rubber (BR) having a weight-average molecular weight (Mw) of 5,000 to 80,000 and styrene-butadiene rubber (SBR). However, the low-molecular weight polymer used by Sasaka is butadiene rubber (BR), which does not comprise an aromatic vinyl compound. Thus, Sasaka fails to disclose or suggest a rubber composition comprising a copolymer (B) comprising 5-80 mass% of the aromatic vinyl compound and a copolymer (C) comprising 20-60 mass% of an aromatic vinyl compound, wherein the difference in the aromatic vinyl compound content between copolymer (C) and copolymer (B) is not more than 30 mass%, as presently claimed.

Moreover, with regard to the presently claimed difference in the aromatic vinyl compound content between copolymer (C) and copolymer (B), when the difference in the aromatic vinyl compound content between copolymer (C) and copolymer (B) exceeds 30 mass%, there is a possibility that the compatibility decreases and sufficient fracture strength is not obtained. See paragraphs [0028] and [0057] of the present specification. One skilled in the art would not expect these technical results given the disclosures of Yokoyama and Sasaka.

Thus, Yokoyama and Sasaka, either alone or in combination, fail to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

III. Claims 1-11 and 13-16 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,679,744 to Kawauzra et al; and

IV. Claims 4-12 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kawauzra in view of Yokoyama.

Applicants respectfully traverse.

Kawauzra discloses a rubber composition comprising (i) natural rubber and/or polyisoprene rubber; (ii) styrene-butadiene copolymer rubber and/or polybutadiene rubber; and (iii) an A-B type block copolymer.

In addition, in Table II-1, Kawauzra discloses the use of a block copolymer having a weight average molecular weight of 85,000, but does not disclose a styrene-butadiene copolymer (C) having a weight average molecular weight of not less than 300,000. Moreover, in Table V-2, Kawauzra utilizes a SBR having a weight average molecular weight of 320,000, a styrene content of 41 wt% and a vinyl content of 37 mol%. However, the block copolymer in Table V-2 has a weight average molecular weight of 500,000. See Table V-4.

Thus, Kawauzra fails to disclose or suggest a rubber composition comprising both a copolymer (B) having a weight average molecular weight of more than 50,000 but not more than 300,000; a vinyl bond content in the diene compound portion of 10-80 mass%; and 5-80 mass% of the aromatic vinyl compound, and a copolymer (C) having a weight average molecular weight of not less than 300,000; a vinyl bond content in diene compound portion of 10-80 mass%; and 20-60 mass% of the aromatic vinyl compound, wherein the difference in the aromatic vinyl compound content between copolymer (C) and copolymer (B) is not more than 30 mass%, as presently claimed.

In this regard, the Examiner asserts that "it would have been obvious to one of ordinary skill in the art to utilize a block copolymer having a weight average molecular weight of less than 300,000."

Applicants disagree.

According to the present invention, when the copolymer (B) has a weight average molecular weight of more than 300,000, the processability of the rubber composition is deteriorated. See Comparative Example 3 in Table 2 of the present specification. One skilled in the art would not expect these technical results given the disclosure of Kawauzra.

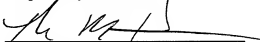
Moreover, with regard to the presently claimed difference in the aromatic vinyl compound content between copolymer (C) and copolymer (B), when the difference in the aromatic vinyl compound content between copolymer (C) and copolymer (B) exceeds 30 mass%, there is a possibility that the compatibility decreases and sufficient fracture strength is not obtained. See paragraphs [0028] and [0057] of the present specification. One skilled in the art would not expect these technical results given the disclosures of Kawauzra and Yokoyama.

Thus, Kawauzra and Yokoyama, either alone or in combination, fail to render obvious the present claims. Accordingly, withdrawal of the rejections is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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CUSTOMER NUMBER

Date: October 7, 2010